REFLECTIONS OF AN OLDTIMER ON THE FLORA OF LATVIA

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A flora of Latvia (P. Galenieks: Latvijas PSR Flora) was published in four volumes in the years 1953-1959. It will henceforth be cited as FL. It is of course much too late for a review of this flora, but as there are different omissions concerning my botanical activities in Riga before the Second World War, I decided to enumerate them, so that my discoveries of diverse rarities would not sink into oblivion. I published "The adventive flora of the railroad net in Riga" (Mühlenbach, 1932-1934), which was a shortened version of my thesis work for obtaining the magister (master) degree. I was able to find 128 species not native to Latvia in the years 1924 through 1932. I also cited previous records of synanthropic plants collected in Riga by others (59 species).

I compared my paper thoroughly with FL and found that from my 128 species 21 were missing, 14 of them being novelties. These plants are: Hordeum jubatum L., Commelina communis L., Silene multiflora (Waldst. & Kitt.) Pers., S. procumbens Murray, Dianthus campestris Bieb., Nigella sativa L., Ranunculus illyricus L., Rapistrum perenne (L.) All., Erysimum repandum L., E. diffusum Ehrh. (E. canescens Roth), Alyssum minus (L.) Rothm., (A. campestre auct.), Chorispora tenella (Pallas) DC., Melilotus wolgica Poiret in Lam., Vicia grandiflora Scop., V. lutea L., Lathyrus aphaca L., Thymus pannonicus All. (T. marschallianus Willd.), Sideritis montana L., Stachys recta L., Veronica spicata L. subsp. incana (L.) Walters (V. incana L.), and Valerianella eriocarpa Desv.

Some of the names I used were changed according to Flora Europaea (Tutin et al., 1964-1977). I did not think that it would be worthwhile to mention the localities, date of discovery and so one. These data can be obtained from my original paper if desired. Also among the second group mentioned in my paper - the synanthropes found in Riga by others - there are omissions, altogether 20 species. They are: <u>Alopecurus pratensis L. x A. arundinaceus</u> Poiret in Lam. (<u>A. ventricosus</u> Pers.), <u>A. myosuroides</u> Hudson, <u>Deschampsia</u> <u>setacea</u> Richter (in Tutin, <u>D. setacea</u> (Hudson) <u>Hackel</u>),

¹ Missouri Botanical Garden, P. O. Box 299, St. Louis, Missouri 63166. Phalaris canariensis L., Hordeum secalinum Schreber, <u>Chenopodium vulvaria L., Astragalus boeticus L., Ornithopus</u> perpusillus L., Vicia pannonica Crantz, Androsace maxima L., <u>Verbena officinalis L., Leonurus marrubiastrum L., Verbascum</u> <u>densiflorum Bertol. (V. thapsiforme Schrader), Veronica persica</u> Poiret in Lam. (V. tournefortii Gmelin), <u>Dipsacus sativus (L.)</u> Honckeny (D. fullonum Miller), D. fullonum L. (D. sylvestris Hudson), <u>Bidens pilosa L., Anthemis ruthenica Bieb., Carduus</u> tenuiflorus Curtis, and C. acanthoides L. x C. nutans L.

It is true that several of these plants were published in the last century by some early writers whose reliability has been questioned subsequently. But many of these plants were discovered by the most reliable Latvian botanists, and some of the questionable reports were later verified.

For seven rare species found by myself and others and which were cited in my paper as well as in FL, the name Riga is missing among the localities cited in FL. They are: <u>Beckmannia eruciformis</u> (L.) Host, <u>Poa bulbosa</u> L. f. vivipara Koeler (form missing in Tutin), <u>Bromus japonicus</u> Thunb., <u>Asparagus officinalis</u> L., <u>Luzula luzuloides</u> (Lam.) Dandy & Willmott (L. <u>nemorosa</u> (Poll.) E. <u>Mey., Medicago prostrata</u> Jacq., and <u>Lactuca tatarica</u> (L.) C. A. Meyer. <u>Centaurea</u> calcitrapa L. represents an opposite case. FL lists one locality in Riga, while I found it in the Daugavpils II freight yard.

Although I have mentioned that a critique of FL would be irrevelant, I feel that a comment is in order regarding the paragraphs of bibliographical references and the synonyms that are appended to almost all species. One of the most frequent sources for references is Lehmann's "Flora von Polnisch-Livland" (1895, 1896), which was for a half of century the most important source on the Latvian flora. Polnisch-Livland is the historical German name for the eastern province of Latvia, now named Latgale. After the collapse of Poland, which ruled Latgale until 1795, the new rulers incorporated it with the Russian Guberniya (Province) Witebsk.

In his Flora von Polnisch-Livland, Lehmann envisaged two objectives: first, to publish the flora of Latgale, but at the same time to enumerate all plants of the ll Russian guberniyas encircling Latgale. Therefore, he used a double numeration, so that it was evident to which of these two groups a plant belonged. Of course very many plants were labelled with both numbers, growing in Latgale as well as in some of the neighboring guberniyas. For some introduced plants no numbers were given, but it was always clear where the localities were situated. Nevertheless, FL did not take account of this feature in Lehmann's system and sometimes cited plants far away from Latvia as growing there. For example, Lehmann gave the distribution of <u>Rorippa austriaca</u> (Crantz) Besser (as <u>Nasturtium austriacum</u> Crantz) as: "Lith. Minsk; Moh. (Lind.); bei Eichw. und Jundz. erst Podolien. Eingeschleppt oder verwildert" (translation: Lithuania, Minsk; Mohilew (Lindemann); by Eichwald and Jundzill only Podolia). All these places mentioned are far away from Latvia, yet FL cites it as native. The plant was later found in Latvia, but only in 1925 by me at Kemeri railroad station.

The incorrect interpretation in FL of Lehmann's data about geographical distributions created a pitfall for subsequent authors, who often have taken every citation of Lehmann in FL for granted.

Numerous plants are missing from FL which were found and published by others too. For example, Kupffer (1934) published as a synanthropic novelty <u>Achillea gerberi MB. genuina</u> Schmalh., probably a polemochore from the WWI (polemochore = follower of war, coined by Mannerkorpi (1944-45). It was discovered by A. Grosse on 25 June 1934, and rediscovered by me much later, toward the end of my abode in Riga. Because the taxonomy of this species is quite complicated, the name must be changed. Afanassiev (1959), who unravelled this question, gave priority to Achillea micrantha Willd.

FL also did not reveal the finders' names. An exception was sometimes made for newer publications, but there was no consistency. So, FL gives for <u>Verbascum lychnitis</u> L. and <u>V. phoeniceum</u> L. the primary source A. Petersone, K. Birkmane, Latv. PSSR augu not. (1958) Nos. 581 and 582. Yet both plants were mentioned by me (1932-1934) as found in Riga. Also, for each species there were two more older publications, which were also quoted by me. There are other similar cases.

These reflections on FL were written long ago. Subsequently, a moderate number of Latvian botanical works arrived one by one in the Missouri Botanical Garden's library, though some are missing. But only after concluding some more acute and extensive projects was I able to revert to the botanical problems of my country of descent.

After the conclusion of FL in 1959, Rasings (1960) published a paper on novelties and rarities of the flora of Latvia as well as on plants which had to be excluded from the flora. The paper is important, and shows how much time, effort and pain was needed to accomplish it. However, I would like to correct an assertion of Rasings that Kupffer (1899) in his essay on the

flora of the Latvian province Kurzeme erred in including the locality Palanga. The last, so Rasips writes, is situated in the Lithuanian SSR, not in Kurzeme. The truth is that Palanga was in 1819-1921 a component of Kurzeme, consequently of Latvia. Only in 1921 was Palanga ceded by arbitration to Lithuania to create an access to the Baltic Sea.

In 1974 a compendium or collective treatise of quite a few Latvian botanists appeared in Russian. It was editted by Tabaka (1974a) and dedicated to one of the eight geobotanical regions of Latvia, namely the Maritime Lowland, which was investigated by different approaches. This region is a strip of land along the Gulf of Riga and the Baltic Sea, and penetrates deeper into the country along the Daugava and Lielupe rivers. Riga, the capital of Latvia, is situated on the banks of the Daugava river 13.3 km from the Gulf of Riga. The range of my former research work in Latvia was confined particularly to this region.

The list of all plants was assembled by Birkmane and Jukna (1974), and contains 1212 species of vascular plants. They included: 1) native plants, 2) naturalized introduced plants, 3) unnaturalized introduced plants, 4) escapees from culture. In it all 21 specimens found by me in Riga and omitted in FL are also missing. In addition, three other species listed by me and by FL are not included in this list: Pimpinella anisum L., Bifora radians Bieb. and Coriandrum sativum L. Also absent are 18 of the 20 species that were published by others. The new list includes Phalaris canariensis L. and Veronica persica Poiret (in my paper V. tournefortii Gmel.). For the former species one of the references given is FL, but in the latter there is no reference mentioned. The list of plants in the Maritime Lowland region can be extended still more. These missing plants include Laserpitium prutenicum L., Scabiosa ochroleuca L., S. columbaria L, and Centaurea montana L. FL gives for the first species Tosmare lake as locality, and for the remaining Riga. Also ommitted from the list are Beckmannia eruciformis (L.) Host, Luzula luzuloides (Lam.) Dandy & Wilmott, and for Bromus japonicus Thunb. localities in Riga are omitted. Feasibly there could be more species of this kind, but no special attempts were made to compare the compendium with publications at my disposal.

I will only mention one paper, because a quoted plant in it is of a special interest to me. Gautzsch (1939) quoted <u>Sisymbrium supinum</u> L. (in the Baltic literature called <u>Braya</u> <u>supina</u> (L.) Koch) as found by Miss Agnes v. Vegesack in Kemeri in 1937. The same plant was located by me on the shore of Kapieris lake near the settlement Antipciems, 4-5 km from Kemeri. I remember very well that it was in 1933, the death year of my father. The shore is covered by chopped-up plates or flagstones of Devonian dolomite. A clear description in given by Doss (1898). The site reminded me vividly of the shore of a water basin on the Estonian island of Saaremaa, where the Estonian hosts presented this plant during a symposium of Fennobaltic botanists. Looking more carefully on the shore of Kapieris lake, I discovered this plant in a similar surrounding. It is not possible to know if this was the same locality where v. Vegesack found it. FL mentioned that this species was found long ago between Valmiera and Tartu, but not found more recently. Flora Europaea does not cite the Estonian localities, although the occurrence there of Braya supina is well-documented.

In his paper, Gautzsch (1939) mentioned three more species that are missing in the compendium as well as in FL - Bromus briziformis Fischer & C. A. Meyer, Phleum arenarium L., and <u>Mimulus luteus L.</u> All are synanthropes, whilst <u>Braya supina</u> (L.) Koch seems to be a native plant. Numerous localities for other species listed by Gautzsch were not cited by FL or the compendium.

A confusing misprint also must be mentioned. FL gives for <u>Orobanche pallidiflora</u> Wimmer & Grab. as one locality "Liepupe", but the compendium for the same species (under the name <u>Orobanche reticulata</u> Wallr.) "Lielupe". Both are geographical names for two different places.

Finally, I would cite some rarer plants observed by me in the Maritime Lowland: Holcus lanatus L. at Olaine, Gladiolus imbricatus L. on Bullu Island, Corallorhiza trifida Chatel. at Vecaki, Polemonium coeruleum L. at Kemeri. I completely agree with Rasing (1960) that Vicia lathyroides L. is an undeservedly forgotten plant (missing in FL); I found it in the naval base in Liepāja and later in the wartime in the same place. It is surely a native plant.

In 1976, A. Schultz published a paper which was of special interest for me, since he investigated the synanthropic flora of the railroad net in Riga. The research was done 1960-1975, covering quite a long time. This meets the postulate proclaimed by E. Lehmann in his "Flora von Polnisch-Livland", which had the subtitle "...dispersal of plants by railroads". Lehmann emphasized that it is imperative to continue the observation of the railroad floras for a long time. His flora was a vademecum for me during my work on the railroads in Riga, but I did not realize at the time the broader significance of his work. Only in St. Louis, where I began work in 1954, did I come across the inaugural dissertation by H. Matthies (University of Rostock, 1925), in which the author emphasized

that "strangely enough a comprehensive treatment of this problem (the introduction of plants by railroads) is in the professional literature given in reality by Lehmann". Lehmann was a native of Riga, therefore we who worked on the railroads in Riga heard these words of high esteem with satisfaction and never forgot them.

Schultz (1976) not only registered all synanthropic plants, but tried also to verify data given by me (1932-1943) at least in some cases. So he commented about Lactuca tatarica (L.) C. A. Mey.: "It is possible that the plants (found by Schultz) are descendents of the colony discovered by V. Muhlenbach already in 1932". I found Sisymbrium wolgense Bieb. very frequently in the Mangali station during the whole observation time (1924-1932), and Schultz reports that Sisymbrium volgense Bieb. ex Fourn. was found in that very place in the first years of his study in great numbers. Many other plants recorded by me also were found by Schultz, but on the other hand, quite a number of plants that were found by me are missing in Schultz's paper. The estimated frequency of various plants differs in the two lists; quite a few plants are now more frequent, but some are now rare. Many plants are listed as unicates. There are also quite a few additions in Schultz's list of plants not seen by me. Twenty two novelties were discovered for the flora of Latvia. Schultz also stressed the fluctuation in numbers of specimens of different species from year to year. All of these features are very typical for a study of the plants on the railroads. I had the same problems in comparing my findings in Riga with those of my predecessors. I have obtained the same results in much more extended research on the railroads in St. Louis, Missouri (1954-1980; Mühlenbach, 1979, 1983). It is appropriate, then, to quote a line from a song by Hinze, which Lehmann (1895) himself cited in his "Flora von Polnisch-Livland": "Ein ewig Kommen, ein ewig Gehen" (a perpetual coming, a perpetual going). The poet described the changes in a university - the perpetual flow of students, coming and going. Only a few stay to achieve professorship. One speaks in the case of plants about naturalization, which is indeed an infrequent occurrence on the railroads.

Schultz commented that the surroundings of the freight car washing establishment in the large Spirotava freight and switching yard are especially rich in synathropes. Many species were found only there. This establishment did not exist during my studies in Riga. The railroads in St. Louis do not have such facilities, where instead the heavily soiled freight cars are cleansed manually on special tracks designated for this purpose. In spite of the different methods used, some similarities exist. The car cleanout tracks in St. Louis are also the most preferred sites for synanthropes to settle down. The methods applied in the car cleanout process are not as decisive in the increased dispersal of synanthropes as is the type of waste, refuse, dirt and so on that is removed from the cars.

I was able to study an ideal cleansing method for freight cars in Edmonton, Alberta. There the Canadian National Railways have in their huge Calder yard car cleaning facilities that are connected with the repair shop. Initially I had no intention of publishing my observations, but I found that the Canadian methods produce very different results compared to those in St. Louis and Riga. So I asked the Edmonton headquarters of Canadian National Railways to permit the publication. Mr. A. P. Rennie, Assistant Manager of Public Affairs, issued the permit to visit the facilities, and Mr. C. G. Pain, Engineering and Planning officer, provided the detailed description. I thank both gentlemen for their assistance. The waste product disposal system is as follows:

"The wash water flows via drainage trenches to a solids separator, then to an oil separator and then to the City of Edmonton's sewer system. The solids separated from the wash water are removed from the separator by a local contractor who takes it away for disposal at a dump site. Solid refuse removed from the car is normally thrown on the conveyor belt and transported to an incinerator. Material vacuumed from the car (winter operation) may or may not be deposited on the incinerator belt. Frequently, it is collected and removed to a dump by truck."

Apparently, the procedure works well: very few synanthropes were found in the vicinity of the facilities and those found were common in other parts of the yard. It demonstrates the very important role of the remnants left behind in the freight cars in the spreading of synanthropes by railroad traffic. The Canadian facilities operate very successfully from the standpoint of railroad management, but the results are at the same time disastrous for the railroad botany.

As a final minor comment about Schultz's (1976) list, I would note that a few of the plants listed as introduced seem to me to be native to the flora of Latvia, i.e., Lolium perenne L. and Potentilla norvegica L.

The second more detailed compendium edited by Tabaka (1977) concerned the Kurzeme geobotanical region in southwestern Latvia. Tabaka included two lists of plants: one containing all plants found in Kurzeme, put together by Birkmane et al. (1977), and the second (by Tabaka et al. 1977) enumerating plants found in several restricted areas using the comparative floristic method. Tolmachev (1931) tried to use mathematical methods to solve floristic problems, and he introduced the concept of the "concrete" or elementary flora - a flora of a very limited area in which species are distributed only in conformity with purely local conditions. According to Tolmachev, the minimal area for a concrete flora would be 100 km², but he admitted deviation from this number. The concrete floras of many small areas are combined into a composite or collective flora. The concrete floras are important in the view of Tolmachev because they render comparisons with other concrete floras feasible.

In Tabaka et al. (1977), a double network of large and small squares was superimposed on the map of Kurzeme. In each large square there were 16 small squares with an area of 70 km². The surface of the large squares was 1120 km². The principal work in Kurzeme was carried out in two large squares. Both of them, including the towns of Kandava and Kuldiga, were chosen for the elaboration of the concrete floras. These concrete floras were studied by two persons (a scientist and a technician) for 7-10 days four times from May until September during three years.

The co-ordinates of this network are widely used in the Latvian botanical literature to pinpoint localities of plants. So the Skirotava freight yard mentioned above is found at 14/27, and the next frequently named Ligciems and Skutas farm at 13/16.

According to R. Beschel (1969), who worked in the U. S. S. R. as an exchange scholar, the concept of concrete floras was widely accepted in the U. S. S. R., but apparently unknown in western Europe and North America (at least at that time). Beschel used in his own work the concept "geon", which is a basic unit of flora, fauna, and landscape. It is closely related to Tolmachev's "concrete flora", but is not identical.

Prior to WWII, the territory of Latvia was divided into four administrative provinces (Vidzeme, Jurzeme, Zemgale, Latgale), 19 counties and 516 (1944) "townships". (It was difficult to find a name for those "minor civil divisions", to use the definition from Webster's dictionary. In Latvian the term is pagasts, in German Gemeinde, and I here use townships, although this name is used in various ways.) The townships enjoyed quite broad administrative functions. The farms in Latvia were either aggregated into villages (ciems, Dorf) or dispersed over the whole territory. The first type prevailed around Kandava. In using geographical names, the pre-war terminology was applied.

It happens that the domicile of my ancestors is situated in the township of Kandava. My clan originated in the Šķūtas farm in the LTgciems village. I know this neighborhood quite well, since many summers were spent here. Most of plants mentioned below were found in the meadows, fields, and groves of Šķūtas.

The compendium (Tabaka, 1977) counts in Kurzeme 1042 species of vascular plants, and for the Kandava and Kuldiga concrete floras the numbers are 665 and 574, respectively. What follows here are comments and discussion of some 27 species, all but two of them from Kandava township.

Bromus secalinus L.: This is mentioned in the compendium as comparatively rare and missing in the Kandava concrete flora. It was not by any means a rarity in Kandava township before WWI. A strange superstition among the farmers suggested that in years of bad harvest, part of the cereals sowed turned into "chess" (B. secalinus). In the description of the genus Bromus in the Latvian SSR, Fatare (1977) used an unfortunate translation of "Flora von Polnisch-Livland" into Russian, namely "Poland and Livland". I previously noted that Polnisch-Livland is the old German name for Latvia's eastern province Latgale.

Cyperus fuscus L.: This plant was known formerly from Kandava, on a woodland path from Skūtas to the Strazde watermill.

Carex davalliana Sm.: Known from along a brook in the woods west of Ligciems.

Carex buxbaumii Wahlenb.: Missing in the Kandava concrete flora, but found in a meadow northeast of Skutas.

Carex capillaris L.: Missing in the Kandava concrete flora, but known from the meadow between Skutas Zirgaploks grove and the path to Strazde.

Luzula luzuloides (Lam.) Dandy & Wilmott (L. nemorosa (Poll.) E. Mey.): This synanthropic plant was discovered in the park of the Strazde estate by me in 1921, and later found by others in several other localities. Strazde apparently was outside the Kandava concrete flora. The bibliographical notice (no. 81, page 159) given for this plant is incorrect: "K. Kupffer, 1087 Versammlung, 23 Febr. 1920--'Korr.-Bl. Naturf. Ver. Riga', 1924. Bd. 58, S. 39-42" should be "...Versammlung 1132 and 1134, 25 September 1922 and 6 November 1922, pages 56 and 59", where this discovery was discussed by Kupffer. Iris sibirica L.: I recorded it in the meadow near the abandoned lime-kiln at the crossing of the railroad trunk line Kandava-LIgciems with the Tukums-Talsi highway.

Stellaria nemorum L.: This species is not listed in the Kandava concrete flora, but is not rare in Ligciems.

Sagina procumbens L.: This also is absent from the Kandava concrete flora, but is frequent in Šķūtas.

Silene dichotoma Ehrh.: Another species not listed in the Kandava concrete flora that I knew in LTgciems, on the railroad west of the Strazde mill-creek bridge.

Ranunculus nemorosus DC. (R. breyninus auct., not Crantz, according to Tutin, 1964-1977): Known from the eastern fringe of the Skutas Zirgaploks grove, and determined as a novelty for Latvia by Kupffer and published by K. Starcs (1936). Until 1973 this was the only locality in Latvia, when this species was found again in the valley of the Abava river at Kandava (Tabaka and Klavina, 1981).

Corydalis intermedia (L.) Mérat.: Found in the woods northeast of Statas; see remarks by Kupffer (1935) and Tabaka et al. (1981).

Cardaminopsis arenosa (L.) Hayek.: This species, not listed in Kandava concrete flora, was found in Ligciems, on the railroad west of the Strazde mill-creek bridge.

Camelina microcarpa Andrz. ex DC.: The first report for Kandava was from LTgciems, on the railroad west of the Strazde mill-creek bridge; here surely it is synanthropic.

Aphanes arvensis L.: Found in the fields around the Kandava crown estate.

Rosa rubiginosa L.: First record for Kandava was on a forest aisle in the woods west of LTgciems. Maybe it is best to mention here a monograph of native roses in Latvia by Riekstings (1980), in which the distributions are illustrated by dotted maps. The Kandava square is blank for R. rubiginosa.

Oxytropis pilosa (L.) DC.: This has the same locality and status as <u>Camelina microcarpa</u>, but the path of introduction of this plant is very interesting. At the Tukums II railroad station, east of Kandava, the administration owned a huge sand-pit, from which it hauled sand for building purposes as well as ballast for reinforcement of the railroad tracks. In the close vicinity of this pit is a locality of the extremely rare (in Latvia) Oxytropis pilosa, discovered first in 1849. Because of the exploitation of the sand-pit this plant was sharply decimated, and by 1927 only the last wretched specimens were seen (Kupffer, 1927). But in the same time this same plant began to appear in different places along the railroad tracks. In addition to LTgciems, I saw it in two freight yards in Riga in 1931 (1932-1934), also along some trunk lines elsewhere, but I cannot recall the exact localities. The spread of this plant is a very nice confirmation of Lehmann's thesis that the railroad operation contributes to the spread of plants on its premises. He could sometimes tell from which sand-pit the sand for ballasting has been taken.

Medicago sativa L. subsp. falcata (L.) Arcangeli (M. falcata L.): This species is missing in the Kandava concrete flora, but was frequent on the meadows in Šķūtas.

Coronilla varia L.: Tukums II railroad station on a siding, where it was surely a synanthrope.

Monotropa hypopitys L.: Also missing in the Kandava concrete flora, but not rare in the groves of Šķūtas.

Swertia perennis L.: Another species not listed in the Kandava concrete flora; along a brook in the woods west of Līgciems.

Asperugo procumbens L.: To the only locality of this species in Kurzeme, discovered by L. Vimba in Kazdanga in 1961, it is possible to add another one, in the southern vegetable garden and orchard of Šķūtas, not far from the granary; observed on a quite restricted site, but persisting for many years.

Pedicularis sceptrum-carolinum L.: It is already quoted for Kandava, but I can add another site, in meadows around the Kandava railroad station, located in the Cere township, and also in the woods along the Skutas-Strazde path.

Pedicularis palustris L.: Missing in the Kandava concrete flora, but frequent on meadows of Skutas.

Orobanche elatior Sutton (O. major L. pro parte): Two additional localities can be added for this species: in a sand-pit near the Nägas farm in Ligciems and along the Kandava-Pūre highway. It was not clear in which township (Kandava or Pūre) the last locality was situated. In both cases it occurred on Centaurea sp.

Galium rivale (Sibth. & Sm.) Griseb. (Asperula aparine Bieb.): Found on the meadows of Skutas along the Strazde mill-creek. By the way, this mill-creek gave me my surname. The Latvian peasants received their surnames only early in the last century, and in many places the surnames were derived from the German language (Mühlenbach = mill-creek).

Senecio sylvaticus L.: Another species missing in the Kandava concrete flora, but rare in woods around Ligciems.

It seems best to include here a review of one of the latest publications, because it treats partly the Kandava concrete flora. It is "The Valley of the Abava River" by Tabaka & Klavipa (1981). The stretch between the towns Kandava and Sabile holds particular scenic beauty and is even called the Kurzeme (or Curonian) Switzerland. The flora of this valley is especially rich; of the 1042 species of Kurzeme, 826 species are found here. This is altogether a carefully composed book, yet I can add eight species more, two being synanthropes. Seven are from LIgciems, which is as the crow flies about 9 km from the river. Although there is some question whether it is correct to include plants from Ligciems in the Abava Valley flora, I do so because the authors included other plants from LIgciems (e.g., Corydalis intermedia). Moreover, the Strazde mill-creek which traverses LIgciems is a tributary of the Abava. These eight plants are Carex buxbaumii Wahlenb., Camelina microcarpa Andrz. ex DC., Aphanes arvensis L., Rosa rubiginosa L., Oxytropis pilosa (L.) DC., Asperugo procumbens L., Digitalis grandiflora Miller and Pedicularis sceptrum-carolinum L.

One of the last compendia of Latvian plants at my disposal was issued in 1979 (Tabaka, 1979), and was devoted to the North Vidzeme geobotanical region. The list of plants for this region was prepared by Klavina et al. (1977), and included 977 vascular plants. As I have botanized very little in this region, so I am not able to add anything new.

A series of compendia began to appear in 1978, titled "The Chorology of the Flora of the Latvian SSR". The second and third volumes were published in 1980 and 1981, respectively. The editor for all three issues was I. Fatare. The chorology series was devoted to rare species, many of which were on the protected list. There were altogether 110 species. For the overwhelming majority of these plants all known localities are given with the indication of sources, and also marked on grid maps with dots. My marginal notes on some species are as follows:

Coronilla varia L.: An additional locality, Tukums II railroad station, has already been mentioned.

<u>Rosa tomentosa</u> Sm. (in reality <u>Rosa mollis</u> Sm. after redetermination): The author objects to including two localities from the monograph of native roses by Riekstips. The first is Rucava township, which belonged to Latvia since medieval times, with interuptions, at least until 1944. The second is Kupffer's locality at "Palanga-Medze", a stretch of 64 km that is most probably located in Latvia too.

Jovibarba sobolifera (J. Sims) Opiz: Šķirotava railroad classification yard in Riga; observed for many years, always sterile.

Linnaea borealis L.: After a long list of localities of this species, for the last one the author states "The site RItupe is erroneously indicated for Latvia, as it is located in the Pskow district". The truth is that RItupe was joined to Latvia according to the peace treaty between Latvia and Russia on August 11, 1920, but was lost after WWII. The herbarium specimen in question was collected in 1926, when RItupe was undisputedly a part of Latvia. A more accurate statement would say that as a result of the transfer of RItupe and Palanga to the Russian SFSR and Lithuania respectively, localities of all plants found there must be excluded from the flora of Latvia. My countryman E. von Lindemann (1867) took this opinion when Alaska was sold by Russia to the U. S. A., and as a result had to remove 136 taxa from the flora of Russia.

The next publication to appear was The Flora of Latvian SSR by Petersone and Birkmane (1980), written in Latvian. It was intended for use by specialists of biology and agriculture, but is also very appropriate to amateur botanists, students, and so on. What is especially important for a work of this kind is the comprehensive glossary of different morphological concepts that is included, as well as many sketches, depicting details of flowers, fruits, leaves, etc. Comparing this flora with FL, one finds that almost half of the plants described in my paper but omitted in FL are included in this new Flora (19 of 41). It is, of course, not clear whether they are my old records or new rediscoveries. The latter is possible because this new Flora includes quite a long list of synanthropes never found before in Latvia. One misses in many cases the indication of time and place of introduction of synanthropic plants. The user of this Flora has to perceive such plants as Anthoxanthum aristatum Boiss., Lupinus luteus L., Impatiens parviflora DC., Veronica filiformis Sm., and many more as native Latvian plants. But many others previously mentioned, including Galenieks in FL, have not considered in a rigorous fashion the question of whether a plant is native.

I would like to cite some rare plants which are not included in the Flora or are included with a question mark or from other localities. Plants considered earlier in this paper are not repeated here. Also, all plants were left out of consideration when I could not rely completely on my memory, and those plants are many. <u>Geranium collinum and Tragopogon</u> dubius are novelties for the synanthropic flora of Latvia.

Digitaria sanguinalis (L.) Scop.: Fishbreeding station Tome in the township of the same name, in a cold frame.

Chenopodium bonus-henricus L.: In the vicinity of the Tervete tuberculosis sanatorium in the township of the same name.

Geranium collinum Stephan ex Willd.: Torpakalns freight yard in Riga. A specimen was sent to the Botanischer Garten und Botanisches Museum Berlin-Dahlem, where it was determined and incorporated into the herbarium (B). It was destroyed during an aerial bombardment of Berlin by the Allies of the WWII.

Prunella grandiflora (L.) Scholler .: Koknese township.

Asperula tinctoria L.: Riverbank of the Daugava river, between Koknese and Plavipas.

Petasites hybridus (L.) P. Gaertner, B. Meyer, & Schreb.: Beside the J. Rozenšteins Pharmacy in the Ogresgals township.

Inula helenium L.: Koknese township.

Tragopogon dubius Scop.: On the railroad tracks in the vicinity of the military hospital in Riga.

Vimba (1981), in a paper on the problems of nature conservation, gave the latest statistics on the plant kingdom of Latvia: angiospermae 1350, gymnospermae 4, pteridophyta 43, mosses 420, lichenes 464, algae 2500, and fungi 2720, for a total of 7561 species.

In the same paper Riekstips described a new taxon, <u>Picea</u> abies (L.) Karst. f. <u>juniperiformis</u> Riekstips. The description and especially the attached photograph demonstrate a very strange looking shrub. Unfortunately, there is no Latin description, which would have validated this new taxon.

It is possible to cite additions to the botanical bibliography of Latvia (Tabaka, 1974b). The two most important papers are: "Enumeratio plantarum phanerogamicum hucusque in Curonia, Livonia, Estoniaque observatarum auctore", Dr. J. Theoph. Fleischer. Bull. Soc. Imp. Naturalistes Moscow, 1829, 1: 74-102.

 "Index plantarum quas in variis Rossiae provinciis hucusque invenit et observavit", Eduardus Lindemann. Bull. Soc. Imp. Naturalistes Moscow. 1860, 33(III): 77-190.

Both are quoted in Florae Rossicae Fontes aperuit (E. R. a Trautvetter, 1880). Von Trautvetter included in his paper a botanical bibliography of Russia, which comprised 1656 treatises, many of which concerned the Baltic region, where Latvia is located. Of course, the bibliography of Tabaka contains most of v. Trautvetter's numbers, but not all. Most of the treatises were published in Korrespondenzblatt des Naturforscher-Vereins zu Riga. Unluckily the older volumes of this journal are missing in our library. I could therefore rely only on the titles. But in the last century geographical names were used which now are ambiguous. So the often used "Baltic provinces" (Ostseeprovinzen) comprised Latvia as well as Estonia. Likewise, "Livland" or "Livonia" meant the northern province of Latvia (Vidzeme) as well as the southern part of Estonia. So I listed only those articles in which the title points beyond doubt to Latvian localities. In some cases, the two bibliographies differed in the years given or in the text of the titles. Without having the original articles, I can do nothing to settle these discrepancies. To save space I will not quote the full title and source, but only the numbers in v. Trautvetter's article: 90, 95, 130, 190, 293, 327, 597, 599, 674, 677, 680, 684, 942, 1192, 1220, 1277, 1293, 1407, 1594, 1651. Von Trautvetter cites one other bibliography, by F. Buhse et A. Buchholtz, Uebersicht der naturhistorischen Literatur von Liv-, Kur- und Ehstland in Korrespondenzbl. Naturf.-Vereins Riga 7, 1854.

I am aware of a serious shortcoming of this paper, which could be raised against it, namely partial want of vouchers. There is demand in some quarters that each published record should be supported by a vouchered specimen. Some of my early collections are preserved in Riga. Now and then they are quoted in the Latvian postwar literature. A recent citation was <u>Thymus marschallianus Willd</u>. (<u>T. pannonicus All</u>., according to Tutin, 1964-1977), mentioned in connection with the rediscovery of this plant, partly on railroads (CepurTte, 1982). But there should be many other vouchered specimens in Riga, especially in Kupffer's herbarium (now in the possession of the University). He had determined all of my rare plants until his untimely death in 1935, and kept often some material of my collections. This assertion is confirmed in at least one case. Fatare (1978) enumerates in her Chorology the known localities of the rare and protected <u>Ajuga pyramidalis</u> L., and lists among them "Ligciens G. RIG. (= Herbarium balticum K. R. Kupffer), Mühlenbach 1931." After his death, my plants with one exception (<u>Geranium collinum</u>) remained in my herbarium, which most probably was lost during the last war. I thought it would be worthwhile to quote all species, even if not unambiguously supported by vouchers so that their eventual rediscovery by other might be facilitated. Most of the species are natives and therefore could grow very well there. The synanthropes are another story, since according to my experiences most of these plants perish in a short time.

The second problem with my paper is that I was not able to use all Latvian postwar botanical works, because not all are present in our library. Therefore, it is possible that some of my remarks are superfluous, and are solved already by others.

Finally, I feel a duty to express my gratitude to the Director of the Missouri Botanical Garden, Prof. Dr. Peter H. Raven, who allowed me to plunge into a project far out of the scope of the present research activities at the Garden. In result, these, my reflections and reminiscences of the flora of Latvia, my old country of origin, were created.

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